

What is claimed is:

Sub B1 1. A method of manufacturing a semiconductor device comprising the steps of:
forming a semiconductor film comprising amorphous silicon on an insulating surface;
forming a crystallization promoting material comprising a metal in contact with said semiconductor film; and
crystallizing said semiconductor film in contact with said crystallization promoting material,
wherein the step of crystallizing said semiconductor film is carried out successively after the formation of said crystallization promoting material without exposing said semiconductor film and said crystallization promoting material to the air.

sub C1 2. The method according to claim 1 wherein said metal is selected from the group consisting of Ni, Pd, Pt, Cu, Ag, Au, In, Sn, and Sb.

3. The method according to claim 1 further comprising a step of patterning the crystallized semiconductor film to form an active layer of a thin film transistor.

Sub B2 4. A method of manufacturing a semiconductor device comprising the steps of:
forming a semiconductor film comprising amorphous silicon on an insulating surface;
forming a crystallization promoting material comprising a metal in contact with said semiconductor film; and
crystallizing said semiconductor film by heating said

semiconductor film;

wherein the step of forming the crystallization promoting material and the step of crystallizing said semiconductor film are conducted successively in a same apparatus without exposing said semiconductor film and said crystallization promoting material to the air.

5. The method according to claim 4 wherein said metal is selected from the group consisting of Ni, Pd, Pt, Cu, Ag, Au, In, Sn, and Sb.

6. The method according to claim 4 further comprising a step of patterning the crystallized semiconductor film to form an active layer of a thin film transistor.

7. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

forming a crystallization promoting material comprising a metal in contact with said semiconductor film by using a vapor of a gas containing said metal; and

crystallizing said semiconductor film in contact with said crystallization promoting material,

wherein the step of crystallizing said semiconductor film is carried out successively after the formation of said crystallization promoting material without exposing said semiconductor film and said crystallization promoting material to the air.

sub C3 8. The method according to claim 7 wherein said methal is selected from the group consisting of Ni, Pd, Pt, Cu, Ag, Au, In, Sn, and Sb.

9. The method according to claim 7 further comprising a step of patterning the crystallized semiconductor film to form an active layer of a thin film transistor.

sub C4 10. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

forming a crystallization promoting material comprising a metal in contact with a selected portion of said semiconductor film; and

crystallizing said semiconductor film in contact with said crystallization promoting material,

wherein the step of crystallizing said semiconductor film is carried out successively after the formation of said crystallization promoting material without exposing said semiconductor film and said crystallization promoting material to the air.

sub C4 11. The method according to claim 10 wherein said methal is selected from the group consisting of Ni, Pd, Pt, Cu, Ag, Au, In, Sn, and Sb.

12. The method according to claim 10 further comprising a step of patterning the crystallized semiconductor film to form an active layer of a thin film transistor.

Sub B5
13. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

forming a crystallization promoting material comprising a metal in contact with a selected portion of said semiconductor film; and

crystallizing said semiconductor film by heating said semiconductor film;

wherein the step of forming the crystallization promoting material and the step of crystallizing said semiconductor film are conducted successively in a same apparatus without exposing said semiconductor film and said crystallization promoting material to the air.

sub C5 > 14. The method according to claim 13 wherein said metal is selected from the group consisting of Ni, Pd, Pt, Cu, Ag, Au, In, Sn, and Sb.

15. The method according to claim 13 further comprising a step of patterning the crystallized semiconductor film to form an active layer of a thin film transistor.

Sub B6
16. A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

forming a crystallization promoting material comprising a metal in contact with a selected portion of said semiconductor film by using a vapor of a gas containing said metal; and

crystallizing said semiconductor film in contact with said crystallization promoting material,

wherein the step of crystallizing said semiconductor film is carried out successively after the formation of said crystallization promoting material without exposing said semiconductor film and said crystallization promoting material to the air.

sub
C17. The method according to claim 16 wherein said metal is selected from the group consisting of Ni, Pd, Pt, Cu, Ag, Au, In, Sn, and Sb.

18. The method according to claim 16 further comprising a step of patterning the crystallized semiconductor film to form an active layer of a thin film transistor.